



CALS TEST NETWORK

AFCTN Test Report 93-050

AFCTB-ID
93-037



Technical Publication Transfer

Using:



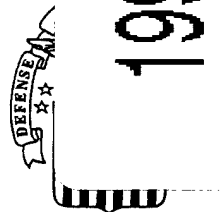
Cubic Defense Systems' Data



MIL-R-28002A (Raster)

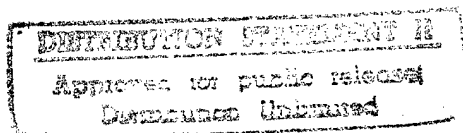


Quick Short Test Report



19960822 128

17 April 1993



Prepared for

Electronic Systems Center

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Using:
Cubic Defense Systems' Data

MIL-R-28002A (Raster)

Quick Short Test Report

17 April 1993

Prepared By

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1. Introduction

1.1 Background

The Department of Defence (DoD) Air Force Continuous Acquisition and Life-Cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze Cubic Defense Systems' interpretation and use of the CALS standards in transferring technical Raster publication data. Cubic Defense Systems used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on a 9-track magnetic tape.

2. Test Parameters

Test Plan: AFCTB 93-037

Date of
Evaluation: 17 April 1993

Evaluator: George Elwood
Air Force CALS Test Bed
DET HQ ESC/ENCP
4027 Colonel Glenn Hwy
Suite 300
Dayton OH 45431-1672

Data
Originator: Jay Aronson
ASC OL/YOAS
102 W D Ave Ste 300
Eglin AFB FL 32542-6808
(DSN) 872-9392 x325

Cubic Corporation
9333 Balboa Avenue
San Diego CA 92186-5587

Data
Description: Technical Manual Test
6 Document Declaration files
20 Raster files

Data
Source System: 1840

HARDWARE Unknown
SOFTWARE Unknown

Raster
HARDWARE Unknown
SOFTWARE Unknown

Evaluation Tools Used:

MIL-STD-1840A (TAPE)

SUN 3/280

AFCTN Tapetool v1.2.8 UNIX

XSoft CAPS/CALS v40.4

Texas Instruments (TI) Tapetool v1.0.1

PC 486/50

AFCTN Tapetools v1.2.8 DOS

MIL-R-28002 (Raster)

SUN SparcStation 2

ArborText g42tiff

XSoft CAPS ccitt2caps v6.0x

AFCTN validg4

AFCTN calstb.475

IGES Data Analysis (IDA) IGESView v3.0

Island Graphics IslandPaint v3.0

Cheetah

Inset Systems HiJaak v2.1

Inset Systems HiJaak Window v1.0

Software Publishing Corporation

(SPC) Harvard Graphics v3.0

Corel Ventura Publisher

Standards

Tested:

MIL-STD-1840A

MIL-R-28002A

3. 1840A Analysis

3.1 External Packaging

The tape arrived at the Air Force CALS Test Bed (AFCTB) enclosed in a box in accordance with ASTM D 3951. The exterior of the box was not marked with the magnetic tape warning label, as required by MIL-STD-1840A, para. 5.3.1.3.

The tape was enclosed in a barrier bag as required by MIL-STD-1840A, para. 5.3.1.2. Inspection of the tape reel showed the label indicating the recording density, as required by MIL-STD-1840A, para. 5.3.1. A packing list, showing all files recorded on the tape, was not enclosed.

3.2 Transmission Envelope

The 9-track tape received by the AFCTB contained MIL-STD-1840A files. The files were named per the standard conventions.

3.2.1 Tape Formats

The tape was run through the AFCTN *Tapetool* v1.2.8 utility. Fifty-two errors and nine notes were encountered while evaluating the contents of the tape labels. All file names were ended with a period, which is not permitted by MIL-STD-1840A, para. 5.1.1.1.

The Document Declaration files were defined as fixed length files when they should have been "D" variable length. The expected block length was 260 when it was defined as 2048.

All 20 Raster files were reported with an incorrect Raster record size. The value should have been 128 when it was defined as 2048 on the tape.

See the Appendix for sample log files.

The tape was read using TI's *Tapetool*. The same errors were reported.

The tape was read using XSoft's CAPS read1840A utility. While no errors were reported, only the last document Raster files were saved. The XSoft utility creates sub-directories based on information in the CALS header. The NONE value in the header resulted in the files all being placed in the same sub-directory, over writing the previous files.

The physical structure of the tape did not meet the CALS MIL-STD-1840A requirements.

3.2.2 Declaration and Header Fields

Because of errors in the naming of the files, parsing the data files could not be completed.

4. IGES Analysis

No Initial Graphics Exchange Specification (IGES) files were included on this tape.

5. SGML Analysis

No Standard Generalized Markup Language (SGML) files were included on this tape.

6. Raster Analysis

The tape contained 20 Raster files. All files were evaluated using the AFCTN validg4 utility. This program reported that files R201, 202, 203, 204, 205, 206, 301, 401, 501, 602, 603, and 604 were not valid CALS Raster files. The errors were traced to missing EOF file coding.

The files were read into the AFCTN Raster viewer calstb.475. The files defined above could be read into the program, although a core dump was noted. Nothing displayed on the screen for the noted files.

The AFCTB has several tools for viewing Raster files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings.

The files were converted using Inset Systems' *HiJaak* without a reported error. The resulting files were read into Corel's *Ventura Publisher*, displayed and printed.

A sample of the files were read into IDA's *IGESView*, displayed and printed without a problem.

A sample of the files were read into Inset System's *HiJaak for Windows*, displayed and printed without a problem.

A sample of the files were converted using ArborText's *g42tiff* without a reported error. The resulting files were imported into Island Graphics' *IslandPaint* and displayed. When attempting to print the files, the system reset itself.

The Raster files do not meet the CALS MIL-R-28002A specification because of missing EOF coding.

7. CGM Analysis

No Computer Graphics Metafile (CGM) files were included on this tape.

8. Conclusions and Recommendations

In summary, the physical structure of the tape from Cubic Defense Systems had basic errors. The files were named with a period which is not permitted. The same file types were incorrect and record sizes were incorrect.

Most of the Raster files were reported as having errors. The errors were traced to missing EOF coding. This error was probably caused by writing the tape using incorrect block factors. The correct files were acceptable only because they happen to be the correct length. The Raster files do not meet the CALS MIL-R-28002A specification.

The tape from Cubic Defense Systems does not meet the CALS MIL-STD-1840A requirements.

9. Appendix A - Tapetool Report Logs

9.1 Tape Catalog

Air Force CALS Test Network Catalog Evaluation - Version 1.2; Release Number 8

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information

ANSI X3.27 (1987) - File Structure and Labeling of Magnetic Tapes
for Information Interchange

ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Fri Apr 16 15:00:18 1993

MIL-STD-1840A File Catalog

File Set Directory: /cals/tapetool8/Set089

Page: 1

File Name	File Type	Record Format/ Length	Block Length/Total	Selected/ Extracted
D001.	Document Declaration	F/02048	02048/000001	Extracted
*** ERROR (MIL-STD-1840A; 5.1.1.1,5.1.3) - File name contains a punctuation character.				
Renaming file from => /cals/tapetool8/Set089/D001. to => /cals/tapetool8/Set089/D001				
*** ERROR (MIL-STD-1840A; 5.2.1.3) - Invalid Recording Format: Header => F, Expected => D				
*** NOTE (MIL-STD-1840A; 5.2.1.3) - Unexpected maximum variable record size encountered. Header => 2048, Expected => 260				
*** NOTE (ANSI X3.27; 8.5.2.6) - Record Length for Recording Format Type D shall be the maximum length of a Measured Data Unit (MDU).				
*** NOTE (ANSI X3.27; 7.2.3) - A variable length record shall be contained in an MDU. An MDU consists of a four byte Record Control Word (RCW) followed immediately by the variable record.				
*** NOTE (ANSI X3.4) - A Record Control Word shall consist of four characters that express the sum of the lengths of the RCW and the variable record.				

<<<< PART OF LOG FILE REMOVED HERE >>>>

D001R001.	Raster	F/02048	02048/000010	Extracted
-----------	--------	---------	--------------	-----------

*** ERROR (MIL-STD-1840A; 5.1.1.1,5.1.3) - File name contains
a punctuation character.
Renaming file from => /cals/tapetool8/Set089/D001R001.
to => /cals/tapetool8/Set089/D001R001
*** ERROR (MIL-STD-1840A; 5.2.1.6) - Invalid fixed record size encountered.
Header => 2048, Expected => 128

<<<<< PART OF LOG FILE REMOVED HERE >>>>>

D006R004. Raster F/02048 02048/000028
Extracted *** ERROR (MIL-STD-1840A; 5.1.1.1,5.1.3) - File name contains a
punctuation character.
Renaming file from => /cals/tapetool8/Set089/D006R004.
to => /cals/tapetool8/Set089/D006R004
*** ERROR (MIL-STD-1840A; 5.2.1.6) - Invalid fixed record size encountered.
Header => 2048, Expected => 128
Catalog Process terminated with 52 error(s), 0 warning(s), and 9 note(s).

9.2 Tape Evaluation Log

Air Force CALS Test Network Tape Evaluation - Version 1.2; Release Number 8
Standards referenced:

ANSI X3.27 (1987) - File Structure and Labeling of Magnetic Tapes
for Information Interchange

ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Fri Apr 16 14:59:55 1993

ANSI Tape Import Log

Allocating tape drive /dev/rmt0...

/dev/rmt0 allocated.

VOL1CALS01

3

Label Identifier: VOL1
Volume Identifier: CALS01
Volume Accessibility:
Owner Identifier:
Label Standard Version: 3

HDR1D001. CALS0100010001000100 93084 93084 000000DECFILE11A

Label Identifier: HDR1
File Identifier: D001.
File Set Identifier: CALS01
File Section Number: 0001
File Sequence Number: 0001
Generation Number: 0001
Generation Version Number: 00
Creation Date: 93084
Expiration Date: 93084
File Accessibility:
Block Count: 000000
Implementation Identifier: DECFILE11A

HDR2F0204802048

M

00

Label Identifier: HDR2
Recording Format: F
Block Length: 02048
Record Length: 02048
Offset Length: 00

***** Tape Mark *****

Actual Block Size Found = 2048 Bytes.

Number of data blocks read = 1.

***** Tape Mark *****

EOF1D001. CALS0100010001000100 93084 93084 000001DECFILE11A

Label Identifier: EOF1
File Identifier: D001.
File Set Identifier: CALS01
File Section Number: 0001
File Sequence Number: 0001
Generation Number: 0001
Generation Version Number: 00
Creation Date: 93084
Expiration Date: 93084
File Accessibility:
Block Count: 000001
Implementation Identifier: DECFILE11A

EOF2F0204802048 M 00

Label Identifier: EOF2
Recording Format: F
Block Length: 02048
Record Length: 02048
Offset Length: 00

***** Tape Mark *****

<<<< PART OF LOG FILE REMOVED HERE >>>>

***** Tape Mark *****

HDR1D006R004. CALS0100010026000100 93084 93084 000000DECFILE11A

Label Identifier: HDR1
File Identifier: D006R004.
File Set Identifier: CALS01
File Section Number: 0001
File Sequence Number: 0026
Generation Number: 0001
Generation Version Number: 00

Creation Date: 93084
Expiration Date: 93084
File Accessibility:
Block Count: 000000
Implementation Identifier: DECFILE11A

HDR2F0204802048 M 00

Label Identifier: HDR2
Recording Format: F
Block Length: 02048
Record Length: 02048
Offset Length: 00

***** Tape Mark *****

Actual Block Size Found = 2048 Bytes.

Number of data blocks read = 28.

***** Tape Mark *****

EOF1D006R004. CALS0100010026000100 93084 93084 000028DECFILE11A

Label Identifier: EOF1
File Identifier: D006R004.
File Set Identifier: CALS01
File Section Number: 0001
File Sequence Number: 0026
Generation Number: 0001
Generation Version Number: 00
Creation Date: 93084
Expiration Date: 93084
File Accessibility:
Block Count: 000028
Implementation Identifier: DECFILE11A

EOF2F0204802048 M 00

Label Identifier: EOF2
Recording Format: F
Block Length: 02048
Record Length: 02048
Offset Length: 00

***** Tape Mark *****

***** Tape Mark *****

End of Volume CALS01

End Of Tape File Set

Deallocating /dev/rmt0...

Tape Import Process terminated with 0 error(s), 0 warning(s),
and 0 note(s).

9.3 Tape File Set Validation Log

Air Force CALS Test Network File Set Evaluation - Version 1.2; Release Number 8
Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information
MIL-R-28002 (1989) - Raster Graphics Representation In Binary
Format, Requirements For

Fri Apr 16 15:00:21 1993

MIL-STD-1840A File Set Evaluation Log

File Set: Set089

Found file: D001

Extracting Document Declaration Header Records...

*** ERROR (get_headers) - Maximum record length of
(= 256) exceeded in header record 1 of header file:
/cals/tapetool8/Set089/D001/D001_HDR.
It will be truncated from 258 to 256 characters.

*** ERROR (MIL-STD-1840A; 5.1) - Invalid number of header records.
Expected = 15; Records read = 1
from /cals/tapetool8/Set089/D001/D001_HDR.

*** I/O ERROR - MIL-STD-1840A Document Declaration Header Records
could not be extracted from
/cals/tapetool8/Set089/D001/D001_HDR

<<<<< PART OF LOG FILE REMOVED HERE >>>>>

A grand total of 6 error(s), 0 warning(s), and 0 note(s) were
encountered in this File Set.

MIL-STD-1840A File Set Evaluation Complete.

10. Appendix B - Detailed Raster Analysis

10.1 File D001R001

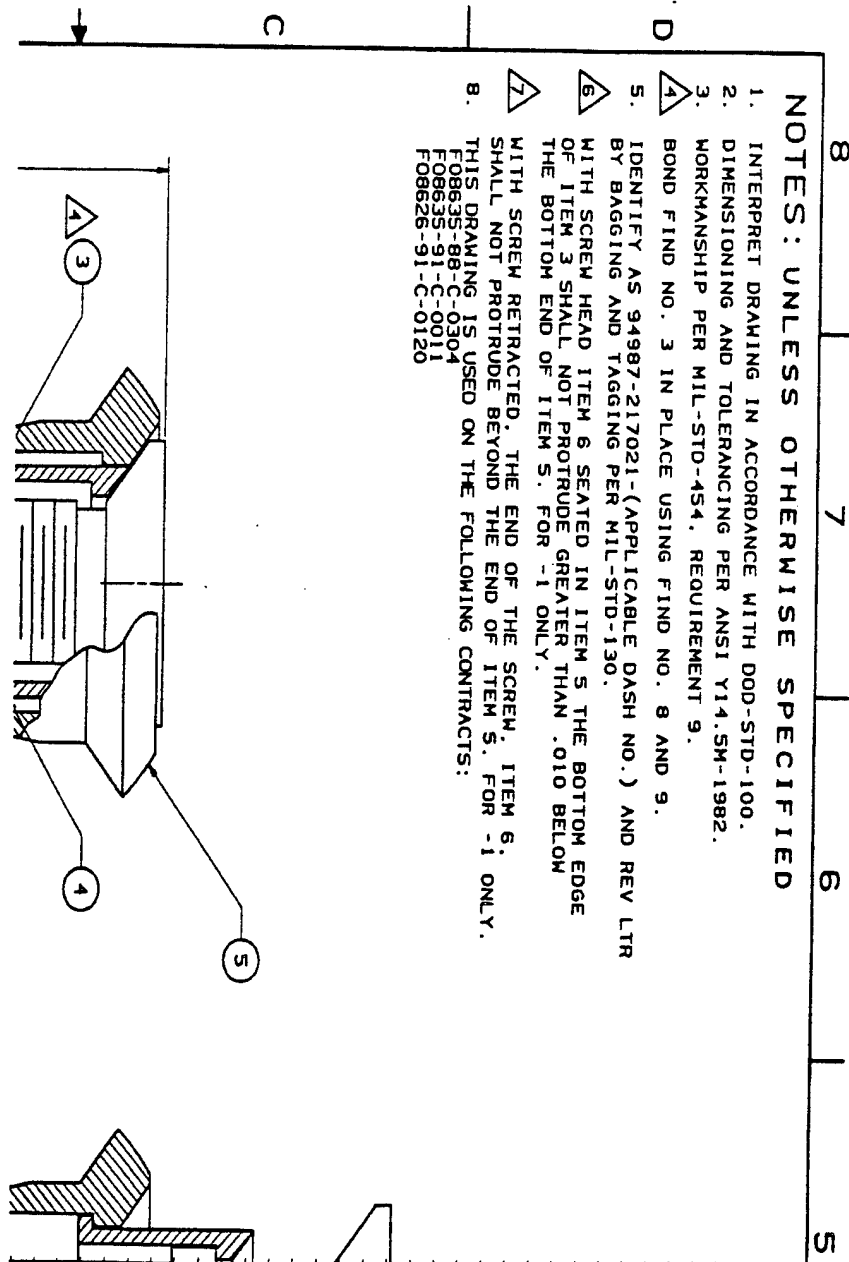
10.1.1 validg4 Error Log

density = 200
path length = 7168
scan lines = 4608
bit format = MSB

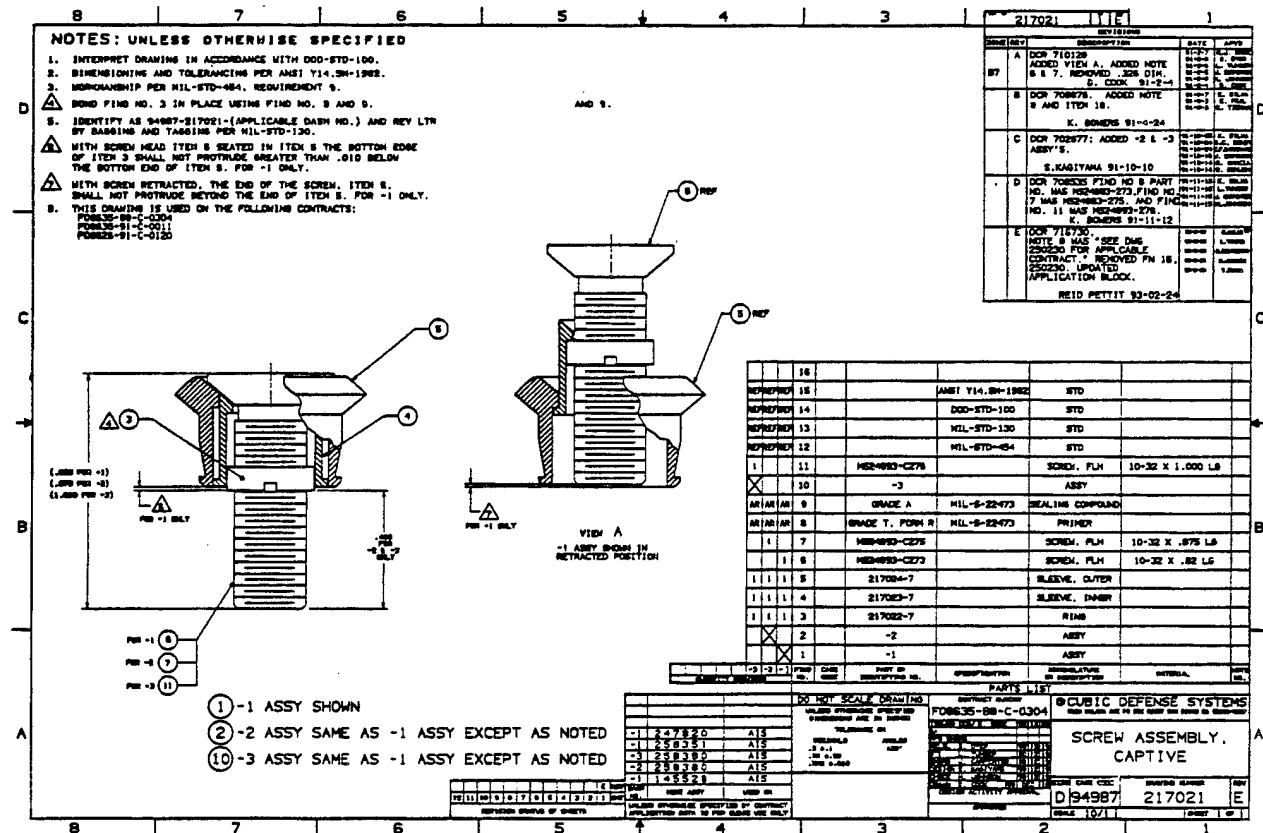
error, scan length exceeds pel count
s=4610 a0=0 bstop=7169 pos=-13462

file = D003R001

10.1.2 Output HiJaak for Windows



10.1.3 Output IGESView



10.2 File D006R003

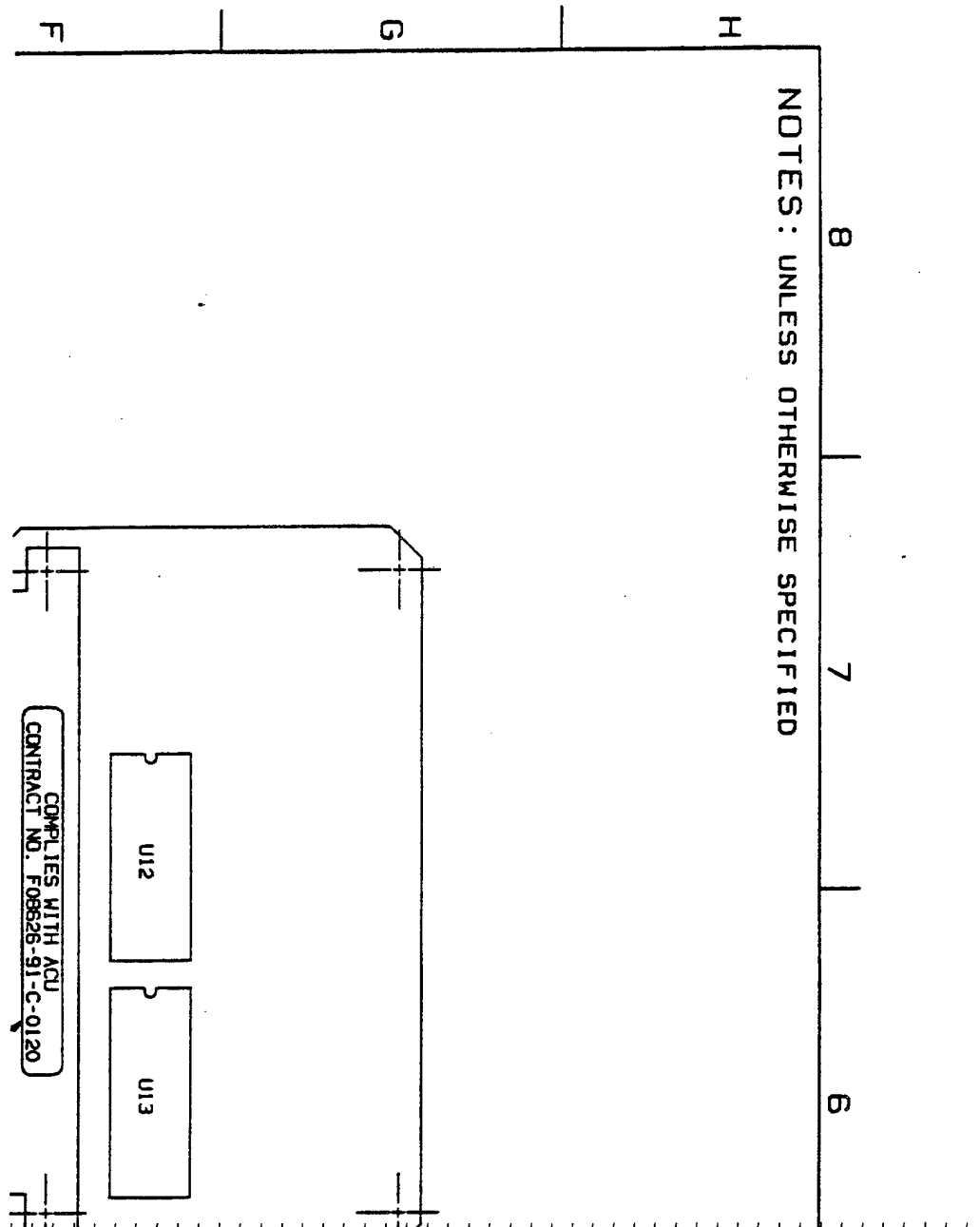
10.2.1 validg4 Error Log

density = 200
path length = 9216
scan lines = 7168
bit format = MSB

error, scan length exceeds pel count
s=7171 a0=0 bstop=9224 pos=1376

file = D006R003

10.2.2 Output HiJaak for Windows



[illegible]

10.3.1 Files 1R001, 1R002, 1R003, and 1R004

1 Root

1 R002

1R003

1 R004

10.3.2 Files 1R005, 1R006, 1R007, and 2R001

1. SCOPE

1.1 This specification defines the detailed requirements for an epoxy adhesive capable of withstanding high temperatures.

2. APPLICABLE DOCUMENTS

(Not applicable)

3. REQUIREMENTS

3.1 **General** - The epoxy adhesive is used as a high temperature resistant coating and a metal-to-metal bonding agent.

3.2 **Physical Characteristics**

3.2.1 **Introduction** - The epoxy adhesive shall be provided as a two part system: a resin and a curing agent.

3.2.2 **Shelf Life** - The pot life of the epoxy shall be at least:

- One hour at a temperature of +200°F.
- One month at a temperature of +11°F.
- 18 hours at room temperature.

3.2.3 **Cure Cycle** - The epoxy shall be capable of curing under any of the following conditions:

- 6 hours at a temperature of +250°F.
- 4 hours at a temperature of +280°F.
- One hour at a temperature of +300°F.

3.2.4 **Temperature** - The adhesive shall retain the specified properties to a temperature of +300°F.

3.2.5 **Flex Life** - The shelf life of the unexposed shall be at least one year in a 200°F closed container at a seal area.

3.3 **Physical Characteristics**

3.3.1 **Shear Strength** - The lap shear strength to aluminum-to-aluminum joints shall be 1,000 psi (70N/cm²) at room temperature. During 800 hours aging at a temperature of +200°F, metal-to-metal shear strength shall be at least of 600 psi. After 800 hours aging, shear strength shall be at least of 1,000 psi.

REV	DATE	DESCRIPTION	BY
A	94987	147345	C

1R005

3.2.2 **Adhesive Resistance** - The cured adhesive shall resist moisture, corrosion, salt, petroleum, carbon, hydrogen sulfide, sulfur, urea, epoxy resin, and other solvents.

3.2.3 **Color** - The color of cured adhesive shall be light brown.

3.4 **Marking** - The containers for each component of the epoxy shall be marked with the manufacturer's part number, manufacturer's name or symbol, batch number, and date of manufacture. Other manufacturer's markings which do not obscure the required markings are acceptable.

3.5 **Revised Marking** - Specific instructions applicable to the epoxy system shall be prominently affixed to each of the containers.

3.6 **Qualification System** - In the performance of this work, the vendor shall operate a strict quality control system to assure compliance with the performance, inspection, and test methods shall be kept complete and shall be available to the customer upon request.

4. QUALITY ASSURANCE PROVISIONS

4.1 **Inspection and Inspection** - Unless otherwise specified in the contract or purchase order, the manufacturer is responsible for the performance of all inspection requirements as specified herein and the manufacturer may use its own or any other facilities available for the performance of the inspection requirements specified herein, unless disapproved by the receiving agency.

5. PACKAGING

5.1 **Packaging** - Packaging shall be in accordance with best commercial practice.

REV	DATE	DESCRIPTION	BY
A	94987	147345	C

1R006

1R007

6. NOTES

6.1 **Manufactured materials of supply**

MANUFACTURER NUMBER	SOURCES OF SUPPLY		
	CAGE CODE	PART NUMBER	NAME AND ADDRESS
147345-1	11147	5002	Spacelink Corp 9000 Thermo Way P.O. Box 19873 Denver, CO 80213

6.2 **Assembly** - Identification of the required sources of supply herein is not to be construed as a guarantee of present or future availability as a source of supply for the items described on this drawing.

REV	DATE	DESCRIPTION	BY
A	94987	147345	C

2R001

APPLICATION

REV	DATE	DESCRIPTION	BY
A	94987	147345	C

REVISIONS

REV	DATE	DESCRIPTION	BY
A	94987	147345	C

7210-1010

REV	DATE	DESCRIPTION	BY
A	94987	147345	C

[illegible] 2RuO_3

2R004

2R005

I. SCOPE

1.1 This specification defines the detailed requirements for a grantee assembly used in the permanent retention for a small or corner fastener used assembly.

2. APPLICABILITY

2.1 The following documents of LEO have to effect on the date of certification for blue (unless an exact time is shown) form a part of this contract document to the extent specified herein.

SPECIFICATIONS

Federal

QQ-9-35 Positive Wrenchmarks of Corrosion Resistant Steel.

QQ-6-704 Steel Bar, Corrosion Resistant, Free Machine

Approved Material

MS 6042 Steel Bar, Forging, Turning, Wiping, Corrosion Resistant

2.2 Availability of Documents - The owner shall assume responsibility for maintaining copies of all documents referenced herein.

3. REQUIREMENTS

3.1 Product Characteristics

3.1.1 Material - The material of the grantee shall be 16-8 type 304 series corrosion resistant steel conforming to QQ-9-35. The material of the bar shall be 17-7 Ph corrosion resistant steel conforming to MS-6042.

3.1.2 Finish - The grantee shall be subjected to accordance with QQ-9-35. The surface finish shall be subjected to accordance with QQ-9-35 and meet criteria of MS-6042.

3.1.3 Environmental - The maximum operating temperature of the grantee assembly shall be 100°F.

3.2 Physical Characteristics

3.2.1 Configuration - The configuration of the grantee assembly shall be as shown in Figure 1.

REF	5010-60-01	FORMED IN	10736
A 94987			
AMOUNT	100	C	1000

Contract No. 33559-77-C-076

3.3 Marking - The greatest assemblies shall be packaged and the package marked with the manufacturer's part number and manufacturer's name or symbol. Other manufacturer's markings which do not obscure the required markings are acceptable.

4. Identification of the supplier source(s) of supply herein is not to be substituted as a guarantee of present or sustained availability as a source of supply for the item.

Contract No. W49961-77-C-0010	Rev. A	Issue 28,727 of 5	Revision to 14726
Material	Part	Quantity	5

10.3.4 Files 2R006, 3R001, 4R001, and 5R001

SUGGESTED SOURCES OF SUPPLY		
ITEM NO.	VENDOR PART NO.	VENDOR
-1	FL10-15019	TRIDAIR INDUSTRIES, FASTENER DIVISION TORRANCE, CA 90505 CODE IDENT: 29372

ITEM -1	MATERIAL	FINISH
GROMMET	18-8 TYPE 300 SERIES CRES PER QQ-S-764	PASSIVATE PER QQ-P-35
SPRING	17-7 PH CRES PER AMS 5643	PASSIVATE PER QQ-P-35, HEAT TREAT TO COND C-900

Control No. 10015-77-C-0010	A 94987	16726
MAKE NONE	REV C	DATE 6

2R006

ITEM	MATERIAL	FINISH
SPRING	17-7 PH CRES PER AMS 5643	PASSIVATE PER QQ-P-35, HEAT TREAT TO COND C-900

3R001

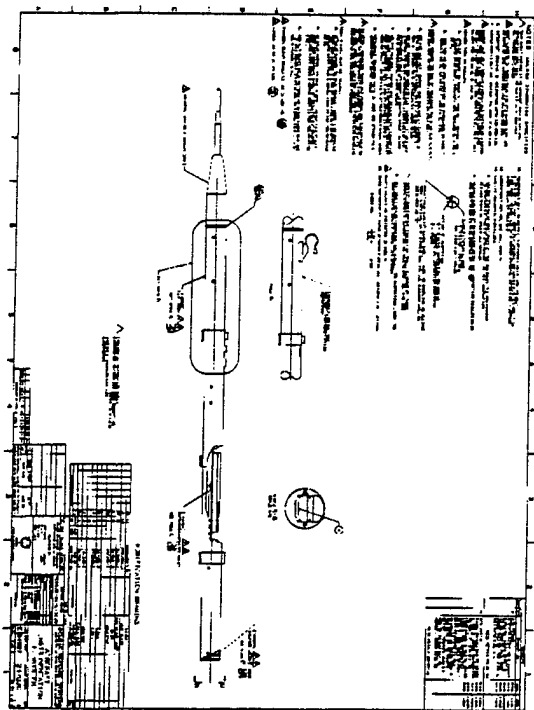
4R001

ITEM	MATERIAL	FINISH
SPRING	17-7 PH CRES PER AMS 5643	PASSIVATE PER QQ-P-35, HEAT TREAT TO COND C-900

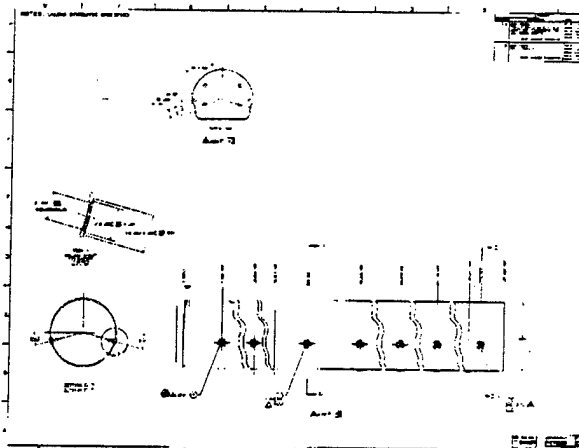
5R001

ITEM	MATERIAL	FINISH
SPRING	17-7 PH CRES PER AMS 5643	PASSIVATE PER QQ-P-35, HEAT TREAT TO COND C-900

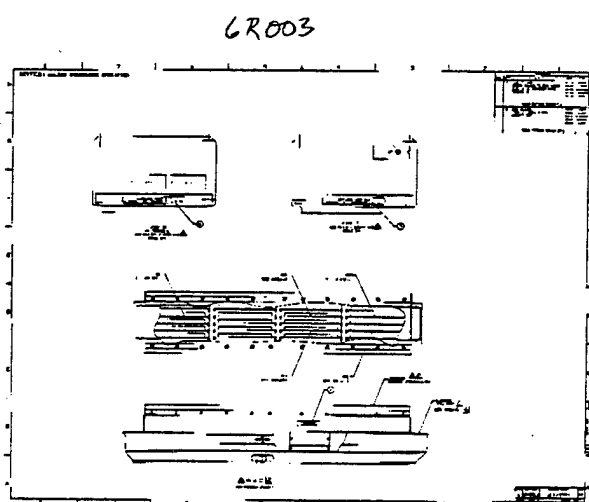
10.3.5 Files 6R001, 6R002, 6R003, and 6R004



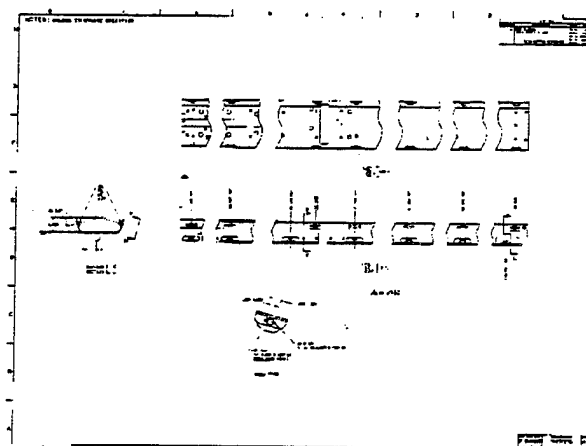
6R001



6R002



6R003



6R004